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Did you ever wonder how we find out about ancient environments and conditions on Earth, especially over time scales longer than humans have

Molecular Isotopic Paleontology: Using chemistry to understand climate and environmental change



been keeping records? Associate Professor Josef Werne's research uses the chemical clues that get left behind in "environmental archives" such as lake and ocean sediments to reconstruct climate and environmental conditions in the past, on timescales ranging from decades to millions of years. In order to understand the chemical tracers of past environmental conditions that are preserved in sediments, it is necessary to study modern systems to determine which processes result in a given chemical signature. Thus, Dr. Werne's approach to research has been the analysis of modern systems to understand various biogeochemical processes and the chemical traces they leave in sedimentary systems, coupled with application of those chemical tracers to paleoenvironmental reconstruction.



Dr. Werne's research group utilizes specific molecules called biomarkers, which are organic compounds found in the geological environment (e.g. lake sediments) that can be traced unambiguously to a specific biological source organism. This approach, which has been called "molecular paleontology", is based on the fact that the distribution of biomarkers in given

lake system reflects the population of organisms such as algae and microbes living in that system as well as the population of land plants living in the surrounding watershed.

In addition to identifying "who's there" using biomarker distributions, they can utilize the stable isotope composition of these biomarker compounds to investigate a variety of processes. For example, plants incorporate the hydrogen isotope composition of the water they consume, so the analysis of the hydrogen isotope composition of biomarkers from plants tells them about variations in rainfall in a given region.

Dr. Werne's research group has been focusing on two major areas: developing a new molecular paleothermometer, and reconstructing climate and environmental change using the sedimentary archive in Lake Malawi in tropical East Africa. It was recently demonstrated that a group of marine archaea called *Crenarchaeota* change the structure of their membrane lipids (by adding/removing cyclic groups) as a function of temperature in order to maintain the right degree of membrane fluidity to remain viable.

(continued on page 3)

Dear Friends and Graduates of UMD Chemistry and Biochemistry,

I hope this issue of Transitions finds you well. I am very pleased to have the opportunity to write to you and bring you up-to-date on what's going on in the department.

It has been a busy couple of years since we published our last newsletter. As you probably know, the university has faced and continues to face severe budget challenges. This has, of course, also affected our department significantly. Without the generous support of friends and alumni we would not be able to continue to provide our students with the opportunities for which we have become well known. Donations have increased significantly over the past few years, allowing us to give out more scholarships and awards to deserving students each year. In addition, we have used donations to purchase modern equipment and instrumentation, computers, and to renovate instructional labs.

Several long-term faculty and staff members have retired or left the department in the past few years. Luckily, despite our serious budget challenges, we were allowed to keep all of these positions and have welcomed four new staff members and five new faculty members to the department within the past three years.

Our program continues to be very popular with students, and enrollments have increased substantially. Despite their increased instructional workloads, our faculty members have continued to be very active in their research programs, succeeding in bringing a large amount of grant funding to the department. They have also increased the visibility of our research by participating in national and international conferences and by fostering relationships with scientists around the world through collaboration, study abroad courses, and exchanges with other universities. We have been privileged to host visiting faculty and researchers from Japan, China, Ukraine and Russia, as well as summer undergraduate research students from Russia and Italy.

Increased funding for, and visibility of, departmental research has enabled us to provide our students with unprecedented opportunities through such programs as our Summer Undergraduate Research Program (SURP) and the university-wide Undergraduate Research Opportunity Program (UROP). The high level of quality and activity in research has also enabled us to recruit some very talented graduate students to UMD; the size of our master's program has grown significantly in the past few years. Faculty grant funding allows many of our graduate and undergraduate students to be paid for their work in research labs. This provides them with financial support, valuable experience and opportunities to enhance their resumes by co-authoring articles in preeminent scientific journals and attending and presenting their research at national and regional meetings of chemical societies.

We are proud to feature several articles about distinguished UMD alumni in this issue. I hope you enjoy reading about Dr. Arne Vainio (Alumni Spotlight), a Family Practice Physician at the Min-No-Aya-Win Human Services Clinic on the Fond du Lac Ojibwe Reservation in Cloquet, Minnesota. The article on the SCSE Academy of Science and Engineering features bios of some remarkable alumni inductees (Dr. Nathan Ballou, Dr. Roy Sanford, Lt. Gen. Samuel Helland and Mr. Kurt Heikkila). Finally, we have included an article on a new scholarship fund established in honor of UMD alumnus Ronnie Lindstrom, an Air Force pilot in the Vietnam war whose F-4 Phantom Jet was shot down in 1970 and who is listed as MIA on the Vietnam Memorials in Washington DC and in Duluth. We are grateful to all who have contributed to the Ronnie Lindstrom International Student Scholarship Fund.

Our faculty members have received several awards over the last few years. I would especially like to mention one in particular, the prestigious ACS Creative Research and Applications of Iodine Chemistry Award, which Viktor Zhdankin will receive at the Spring 2011 ACS meeting. This is not only an honor for Dr. Zhdankin, but also for the department and the university, which support and benefit from his work.

We continue to give our best to do what we do well, and we fondly remember all of our graduates. We are proud to hear about your achievements and successes. We enjoy when you visit and we have the opportunity to reminisce and show you what new things have happened in the department and at UMD. Please stay in touch.

Best wishes,



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UMD Chemistry/Biochemistry & Molecular Biology Club

The UMD Chemistry and Biochemistry Club has benefited from strong student leadership and faculty support over the past few years. At their biweekly meetings during the semester, club members discuss business and then cut loose, experimenting with new and exciting chemical demonstrations. Some of the more popular reactions have involved chemiluminescence, polymerization, and oxidation of gummy bears using molten potassium chlorate.

The club began the 2008/2009 school year by reaching out to all of the incoming freshmen during orientation week. They made liquid nitrogen ice cream of assorted flavors, attempted to carbonate root beer with dry ice and a pressure cooker, and held a taco social. At the end of October, the club helped parents and children of Nettleton Elementary School offer a fun alternative to trick-or-treating, partnering with students from the UMD Education Department to facilitate several interactive and popular demonstrations in a room of "Chemical Magic".

Last spring the club turned its focus to the annual chemistry show, which always attracts a large audience from the campus and the community. Dozens of club members participated, performing chemical demonstrations for the audience. The demonstrations were choreographed to PowerPoint presentations and music, videotaped, and made into entertaining DVDs.

Of course, none of this would be possible without the continuing support of the UMD Department of Chemistry and Biochemistry. The club is very grateful for the kind donations received from faculty in the Chemistry and Biochemistry Department. Department staff members have been invaluable, helping with room space, chemicals, and ideas. Finally, the department has eagerly supported the club by buying delicious homemade cookies from club members for the Friday afternoon seminar refreshments, reinforcing the notion that chemists are also good cooks.



Club President Robert Duerst ('09) helps set up the "Electric Pickle" demonstration for Nettleton students



Dr. Werne's Research (continued from page 1)



This means it is possible to measure the distribution of these organic molecules preserved in sediments and relate it directly to the temperature of the water in which the Crenarchaeota were growing.

Dr. Werne used this molecular paleothermometer to show that during the Last Glacial Maximum (~25,000 years ago) tropical Lake Malawi was about 3.5 °C cooler than it is today, which is a significant temperature change for the tropics. Coupled with this temperature change, he used biomarker compounds derived from terrestrial plants (n-alkanes and lignins) and the composition of the stable isotopes of carbon within these biomarkers to show that, during the cooler glacial period, there was also increased dryness and a contraction of tropical rainforest trees coupled with an expansion of the types of plants, such as savannah grasses, that compete well in drier conditions. In the last couple of years, the expansion of Dr. Werne's research group has allowed him to

expand their work to other systems, including tropical North America in Mexico, New Mexico, and also to Minnesota lakes. What they are finding is that temperature and hydrology are coupled in many different systems, and in New Mexico, for example, as it gets warmer it is very likely to get increasingly arid, as well.

Such information, based on chemical traces left behind in sediments that are thousands of years old (in the New Mexican study, up to 550,000 years old), indicates that the arid southwest is likely to get even drier in the coming century as a result of global warming, which may pose a major problem for the people living there.

FACULTY & STAFF UPDATES

There have been a number of changes in the department in the past few years. Several long-term faculty and staff members retired or left the department and we were fortunate to recruit several new faculty and staff members to our program.

Fond Farewells To:

David Marklund, Senior Laboratory Services Coordinator, retired in Summer 2008 after 15 years with the department and over 30 years at UMD. After about six months of retirement, Dave came back to work in the department on a part-time basis. He is now working as a scientist with Dr. Alan Oyler in the UMD Laboratory of Drug Discovery and Development.

Pat Splan, Instructor, retired at the end of the 2008/2009 academic year. Many of our former students will remember Mrs. Splan, who taught general chemistry to literally thousands of UMD students during her many years with the department.

Evie Tahtinen, Senior Laboratory Services Coordinator, was a valued staff member in the department for many years. Her primary responsibilities were in grant management, budgeting and ordering lab supplies and equipment, but her dedication and loyalty to the department went far beyond that. She was a source of inspiration and support to everyone in the department. Evie retired in June 2009.

Kara Ward, Principal Office and Administrative Specialist, left the department in June 2009 after 9 years. She accepted a promotion to Executive Office and Administrative Assistant in the Department of Management Studies.

Joanne Ellis, Executive Office and Administrative Specialist, retired in May 2010 after 17 years in the department and 31 years at UMD. Students always relied on Jo for help, advice, caring and support -- many of our alumni still keep in touch with her. Jo is looking forward to working in her garden, spending time with her family and amusing herself with her new iPad.

Welcome To:



Dr. Anne Hinderliter, Associate Professor, Physical/Biophysical Chemistry, came to UMD in fall 2007 from Moorhead State University, where she was an associate professor of chemistry. Anne is a graduate of Cornell University (Ph.D. 1994, Biochemistry, Molecular and Cellular Biology with a minor in Physical Chemistry), where she received her doctorate under the supervision of Gerald W. Feigenson. She was a Postdoctoral Fellow with the NIH Training Program in Cell and Molecular Biology from 1994 – 1996 and a Postdoctoral Research Associate in the Department of Pharmacology (with Dr. Rodney L. Biltonen), 1996 – 2000.

Anne conducted honors research as a Chemistry Course (Ch.C) major as an undergraduate in the laboratory of M.T. Record, Jr. She also worked throughout her undergraduate career in the laboratory of Dr. Freya Kamel, a professor in the UW-Medical School. Her research reflects all these early influences. Anne was the 2006 recipient of the Margaret Oakley Dayhoff award from the Biophysical Society for her promise in the field of biophysics.



Dr. Peter Grundt, Assistant Professor, Organic/Bioorganic Chemistry, joined the department in November 2007. He received his PhD from the Universität – Gesamthochschule in Duisburg, Germany. Prior to coming to UMD he worked in the Medications Discovery branch at the National Institute on Drug Abuse.

In his spare time he enjoys going on long walks with his baby son and his dogs.



Randall Helander, Senior Laboratory Services Coordinator, was hired in September 2008. He received his BS in Chemistry (1979) from Mankato State University. He has experience in private industry, university research and development and environmental chemistry. For several years Randall worked in industrial research and development at Hughes Aircraft Company and at the University of Arizona's Center for Microcontamination Control, both in Tucson, Arizona. In 1990 he moved to Duluth, where he worked as a chemist with a number of research laboratories, including the EPA, prior to joining the UMD Chemistry and Biochemistry Department.

Randall likes canoeing and cross-country skiing. In his spare time, he enjoys pen and ink drawing and printing as a hobby. He also enjoys e-mailing his son, Jonathan, who is attending the University of

FACULTY & STAFF UPDATES, CON'T



Brian Gute, Instructor, joined the faculty in fall 2008, teaching general chemistry. Prior to that he worked as a Research Fellow at UMD's Natural Resources Research Institute (NRRI) where he was engaged in molecular modeling research with Dr. Subhash C. Basak. While at the NRRI, he also taught general chemistry at UW-Superior and participated as a regular invited lecturer on molecular similarity techniques for the Indo-US Lecture Series on Discrete Mathematical Chemistry. Brian received his MS in Toxicology from the University of Minnesota in 2001, where his research focused on computational toxicology techniques for predicting physical and toxicological properties of chemicals. As a member of the Chemistry and Biochemistry Department, his teaching interests include undergraduate general, organic, and biochemistry, as well as applications of topology and molecular modeling in chemistry.

Brian and his wife, Linda, enjoy living in the Duluth area with their dog, Suka.



Ahmed Heikal, Associate Professor, Biophysical/Physical Chemistry, joined UMD in 2009 from the Pennsylvania State University, where he was an Associate Professor of Bioengineering (2003-2009). Ahmed is a graduate of California Institute of Technology (Ph.D. 1995, Applied Physics), where he worked on ultrafast laser spectroscopy and molecular dynamics under the supervision of Dr. Ahmed H. Zewail (Linus Pauling Professor of Chemistry, Nobel Laureate in Chemistry, 1999). As a Research Fellow in Chemistry, Ahmed spent two years working with Joseph Perry (Jet Propulsion Laboratory, Pasadena, CA) and Seth Marder (Beckman Institute, Caltech) on nonlinear laser spectroscopy of synthetic molecules for optical lithography. With an interest in Biophysics, Ahmed joined the laboratory of Dr. Watt W. Webb, S.B. Eckert Professor in Engineering, School of Applied and Engineering Physics, Cornell University as a Research Associate (1997-2003).

In his spare time, Ahmed, a father of two, enjoys gardening and landscaping, playing with the cats and long walks by the lake with his wife, Erin Sheets.



Barbara Chapin, Accountant, joined the staff in summer 2009. Barb has a BA in Accounting from Luther College in Decorah, IA. She held accounting positions in a variety of industries including audit, manufacturing and marketing in Minneapolis, MN and Cedar Rapids, IA. Most recently she held the position of Financial Officer for the Duluth Superior Area Community Foundation.

Barb stays busy outside of work with hardanger, a form of Norwegian needlework, and quilting projects. She also enjoys walking, biking and skiing.



Dawna Carlberg, Principal Office and Administrative Specialist, joined the staff in fall 2009. Dawna came to UMD from the NorthShore Inline Marathon where she was the Executive Assistant for 14 years. Her experience with organizing large events is a great asset to the department. During her first year she organized several large events, including the Summer Undergraduate Research Program. This year she will be in charge of the Annual Undergraduate Research Symposium and Spring Banquet.

Dawna is an avid sports fan. She enjoys alpine skiing, playing volleyball and spending winter evenings playing in darts leagues with her girlfriends and her husband, Matt. She loves watching her son, Alex, alpine race and play baseball. Dawna loves the beach and she spends every birthday in Mexico.



Linde Eckstrom, Principal Office and Administrative Specialist, was hired in fall 2010.

Upon moving to Duluth in 2000, she worked for UMD Family Medicine, providing administrative, research and grant management support to a health clinic delivering services to teen moms and their children in the Duluth public schools. Other previous employment occurred in the Twin Cities where she worked for the U of MN Hospitals, and at Hennepin County Medical Center. She has a BA in English and European History and has done graduate work in history and counseling psychology.

Linde has two sons. When not at work she enjoys knitting, hiking and beachcombing with her husband, and working in her garden with assistance from Gus, the cat.

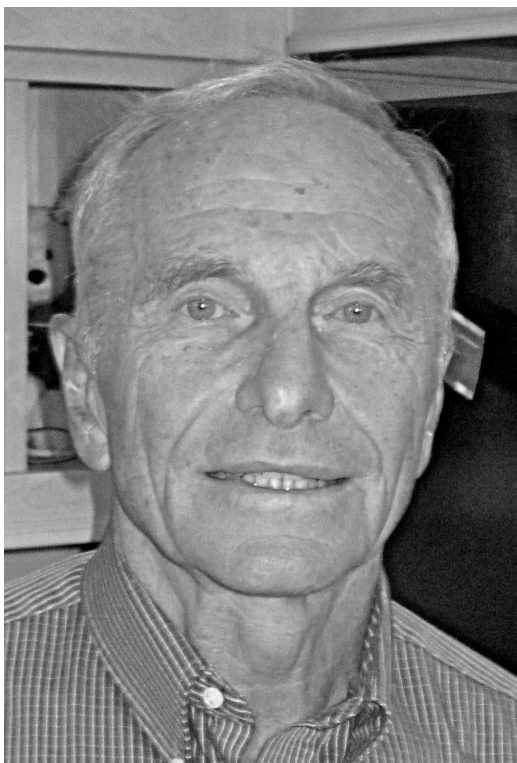


Kate Swanson, Instructor, joined the faculty in fall 2010. She graduated from UMD in 1997 with a double major in Chemistry and Biochemistry and Molecular Biology and completed her master's degree in Inorganic Chemistry in 2008. She has had previous teaching positions at UW Superior, Duluth Business University and UMD.

Kate has two daughters, Susannah and Sarah, ages 8 and 10.

Dr. John Fulkrod Retires

John Fulkrod, Professor, UMD Chemistry and Biochemistry and UMD Track and Cross Country Coach, retired from the department in May 2010 and from his coaching position at the end of December, 2010.



Dr. John Fulkrod

Dr. Fulkrod taught in the UMD Chemistry and Biochemistry Department for 18 years. Prior to his time in Duluth he was a faculty member at UM Waseca; when that campus closed in 1992 he transferred to UMD where he taught the one-year course sequence in general, organic and biochemistry. Many of the students taking this course were exercise science majors and science education majors; with his experience teaching at the public school level and as a coach who tried to use sound scientific principles in training, he was able to provide some unique perspectives on the material provided in this course sequence. He also taught Aspects of Chemistry, a course he enjoyed because he was able to discuss chemistry as it applied to real-world situations, like the chemistry of mining. This approach made the course more interesting and accessible to students. Finally, he taught the large general chemistry courses, where he was able to reach hundreds of students each year.

In addition to his teaching responsibilities, Dr. Fulkrod was a very successful track and cross-country coach in Waseca and at UMD. Upon accepting his first coaching position, he became a student of distance running and track and field and took on all duties, big and small, to enhance the performance and participation of the student athletes. One of those athletes, Dick Beardsley, went on to become a world-class marathoner. Under his tutelage, the UMD cross country men won 11 straight Northern Sun Intercollegiate Athletic Conference team titles from 1993 – 2003, and the women won 10 straight titles from 1993 – 2004. In reflecting on his years as a track and cross country coach, Dr. Fulkrod says he feels proud of his recruiting efforts for the school – not only attracting good athletes, but also good students and good citizens.

John and his wife Linda have relocated to Florida where they have had a second home for several years. There they expect to enjoy the great weather, golfing, and social events and to keep fit playing tennis and swimming in their pool. They hope to return to Minnesota for a couple of weeks during the summers, where they will visit friends at school and church and John will get in some fishing.

James C. “Charlie” Nichol Computer Lab

On February 28, 2008, a new computer lab in the Swenson Science Building was dedicated to Dr. James “Charlie” Nichol, who taught in the UMD Chemistry Department from 1957 through 1992. Funding for the lab was provided by generous donations from Charlie’s former students, family members and colleagues. A plaque commemorating Charlie’s many contributions to the department and



Faculty Research Grants

Over the last four years, the faculty in the Department of Chemistry and Biochemistry has been very successful in securing financial support from public, private and industry-based funding entities to conduct innovative and meaningful research in a variety of disciplines. Following is a brief sampling of some of the research projects that are currently underway:

Title	Principal Investigator	Funding Agency
Comparative Performance Study of Chip Seal and Bonded Wear Course Systems Applied	John Evans	MN Department of Transportation
Annexins and Membrane Organization	Anne Hinderliter	National Institutes of Health
Version II Imaging Immunoreceptor Domain Dynamics	Ahmed Heikal	The National Science Foundation
Folate Amnioboronic Acids as Targeted Anti-Cancer Agents	Venkatram Mereddy	National Institutes of Health
RUI – Preparation, Characterization and Theoretical Modeling of the Mixed-Valence States in Polynuclear Porphyrins and Tetraazaporphyrins	Victor Nemykin	The National Science Foundation
RUI: Hypervalent Iodine Chemistry	Viktor Zhdankin	The National Science Foundation
Tryptanthrin and Indirubin Analogs as Toxoplasma Gondii Inhibitors	Peter Grundt	The Stanley Medical Research Institute
Auto-Oxidation Chemistry of Rapamycin (Sirolimus): Reactions of Rapamycin, PLGA and BHT in Aqueous Media and Related Analytical Methodologies	Alan Oyler	Cordis Corporation
Elucidation of the Structure and Function of Four Mammalian BACE1 Isoforms: Implications for BACE1-Directed Alzheimers Disease Therapeutics	Joseph Johnson	Research Corporation
Collaborative Research: A high-resolution middle Pleistocene paleoclimate record from the Valles Caldera, New Mexico	Josef Werne	The National Science Foundation
How important is “old” carbon in Lake Superior? A radiocarbon investigation.	Josef Werne/ Elizabeth Minor	The National Science Foundation – Chemical Oceanography



Dr. John Evans

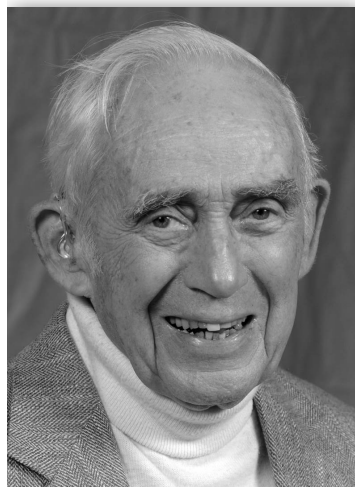


Dr. Robert Carlson in his lab

SCSE Academy of Science & Engineering

The Academy of Science and Engineering was established in 2002 to give public recognition to alumni and special friends of the Swenson College of Science and Engineering who have brought distinction to themselves through their participation, commitment and leadership in their chosen professions. The annual induction ceremonies are held each year during the fall semester. Over the past several years, the Department of Chemistry and Biochemistry has been honored to facilitate the induction of the following group of very distinguished alumni to the Academy.

2007 Dr. Nathan Ballou, BS Chemistry, 1941



Dr. Nathan Ballou

Dr. Ballou studied Chemistry, Physics, Math and German at the Duluth State Teacher's College. Following his graduation in 1941, he attended the University of Illinois to pursue a doctorate in chemistry. He vividly remembers sitting in his dorm room on a Sunday afternoon with some of his classmates and hearing the announcement of the Japanese attack on Pearl Harbor. The following spring he was recruited to work on the Manhattan Project in Chicago.

Throughout World War II, Ballou worked on the Manhattan Project at the University of Chicago and the Oak Ridge National Laboratory, Tennessee, with such famous scientists as Enrico Fermi, Edward Teller, Leo Szilard, Glenn Seaborg and Arthur Holly Compton. The scientists of the Manhattan Project worked to create material for the atomic bomb, specifically on the production of plutonium in a nuclear reactor and on the separation of the uranium-235 isotope from the more abundant uranium-238 isotope (uranium enrichment). Dr. Ballou was one of about 70 scientists to sign a petition sent to President Truman urging him to do a demonstration of the bomb before actually dropping it on Japan.

After the war, Ballou returned to the University of Chicago where he completed his PhD degree in 1947. He then worked as a postdoctoral fellow with Glenn Seaborg at the University of California at Berkeley. From there he went on to work at the U.S. Naval Radiological Defense Laboratory (NRDL) in San Francisco, the Belgium Nuclear Energy

Center, Brussels, and at the Pacific Northwest National Laboratory operated by Battelle in Richland, Washington, where, at age 87, he still works today conducting research in radiochemistry, mass spectrometry, and new analytical techniques.

While visiting the campus, Dr. Ballou presented a seminar for the department, "Classical Chemistry and Manhattan Project Radiochemical Research."

2009 Dr. Roy L. Sanford, BS Chemistry and Mathematics, 1968



Dr. Roy Sanford

Roy L. Sanford received a PhD in Biostatistics from the University of Minnesota in 1973 and an MBA from the Keller Graduate School of Management in 1980. He graduated magna cum laude from UMD with majors in Chemistry and Mathematics in 1968. Over the course of his career, he worked as a professional statistician, educator, manager, consultant and executive.

As a statistician he worked on research projects in the environmental, health, and life sciences, as well as on industrial projects concerned with quality and operational improvement. He was a part of many product development and process improvement efforts including the development of the statistical department at Baxter Healthcare. On a national level, he consulted on industrial trade association projects and chaired annual meetings of pharmaceutical company statisticians. These efforts resulted in numerous technical and industrial publications and presentations.

As a manager and executive within Baxter Healthcare Corporation, he administered corporate functions, directed projects and developed programs with international scope. Some of these activities included developing a worldwide technical training program and administering the Baxter Quality Award internationally. He became VP of Quality Management as a consequence of these efforts. Additionally, he served as a Malcolm Baldrige National Quality Award examiner for four years and was active within the ASQC. In retirement he continues to consult on quality management issues with companies from the healthcare, telecommunications and furniture industries.

Dr. Sanford retired to Colorado to pursue his interests in amateur photography and his enthusiasm for the outdoors and the mountains. Here he discovered the Denver Botanic Gardens. Though he had no prior formal art instruction, he became a student of botanical art and illustration and was certified in the field in 2004. His work in this area has been published, and several pieces are in private collections. He is also interested in dog breeding and training and with his wife owns, shows, trains and breeds champion Hungarian Vizslas. These and other activities have made retirement an active and rewarding time of life for him.

SCSE Academy of Science & Engineering, continued

2010 Lt. General Samuel T. Helland, BS General Science, 1973



Lt. General Samuel T. Helland

Lt. Gen Samuel Helland grew up Crookston, MN and graduated from Lincoln High School in Thief River Falls, MN. After serving a term in the US Army Special Forces, he attended UMD, graduating in 1973 with a degree in General Science, following which he attended Marine Officer Candidate School where he was selected to attend Navy Pilot training. There he qualified as a helicopter pilot and began an illustrious career in the Marine Corps. Over the next 27 years Lt. Gen Helland held various command positions at all levels of the service, culminating in his appointment as Commanding General, US Marine Forces Central Command. In this position he was responsible for all USMC forces in the Central Command Area of Responsibility stretching from the Horn of Africa through the Arabian Gulf region and into Central Asia; this area included Iraq and Afghanistan where Marines were conducting combat operations.

Over the course of his career, Lt. Gen Helland was involved in exercises and contingency operations in areas ranging from the Arctic Circle through the Mediterranean and Caribbean Seas and the Persian Gulf. He saw combat in Vietnam, Desert Storm and in our on-going conflict against terrorism. He also participated in and led humanitarian missions in Sierra Leone and the Albania-Macedonia region. As a Logistics Officer he was responsible for all the maintenance and supply issues of a Marine Aircraft Group. He served a tour at Marine

Headquarters in Washington, D.C. as a staff officer and on the Joint Staff in the Pentagon.

Lt. Gen Helland credits the solid science and math background he developed at UMD for his successful career both as an independent operator in Special Forces and especially as a Naval Aviator - completing post maintenance check flights, flying military aircraft off ships, conducting missions, and being a flight instructor.

2010 Mr. Kurt Heikkila, MS, Chemistry, 1979



Mr. Kurt Heikkila

Kurt came to UMD as a graduate student in 1977 after receiving a bachelor's degree from Concordia College in Moorhead. He chose to pursue his thesis research with Professor Tom Bydalek in analytical electrochemistry and received his M.S. in Chemistry in 1979. He remained at UMD to work in the laboratory of Professor Robert Carlson on the disinfection chemistry of chlorine, with the resulting development of more environmentally friendly industrial alternatives. He then entered the doctoral program in chemistry on the Twin Cities Campus, taking a full complement of graduate courses in analytical and physical chemistry. However, both Kurt and his wife Beth left their studies at the University for innovative careers in industry before the completion of their academic studies.

Mr. Heikkila assumed increasing levels of responsibility with such job titles as Project Manager (EcoLab), Manager (Cambrex Corporation), Department Head (Dupont), President and Chairman (Aspen Research Corporation), Senior Vice President (Andersen Corporation), President (Wild River Consulting Group), Director (Onesys), Chairman and President (Tundra Companies), Director (North American Tungsten) and Managing Partner (Tungsten Diversified Industries). While he was exploring these opportunities in industry he generated about 50 patents and publications primarily dealing with the composition and application of composites.

Mr. Heikkila is a person of vision who is committed to making a positive impact on society. This begins with his family and gravitates to his "extended family" which includes his many friends and associates who have been a part of the dramatic demonstration of how "green" chemistry can be the basis of a profitable business venture.

While on campus for induction ceremonies, Mr. Heikkila visited the senior seminar class to discuss his philosophy on successful career development, summarized in the phrase "if you have a passion for it, do it!" His talk was very well received by the students. He also presented a departmental seminar, "Invention and Innovation: The Technical and Business Dilemma", in which he emphasized the idea that "new to-the-world ideas need innovation to allow products to be made in a customer-focused and cost-effective manner". Kurt used his company, Tundra Companies, as a case study to illustrate how the invention of interfacial modification used innovative augmentation as a key component in developing Tundra's very successful line of marketable products.

Alumni Spotlight: DR. ARNE VAINIO



Dr. Arne Vainio

Dr. Ron Caple suggested our choice for this issue's "Alumni Spotlight": Arne Vainio, MD. In Ron's words, "...when I think of the many great students to whom I have had the pleasure of teaching organic chemistry, the name Arne Vainio comes to mind. I recognized early on the determination and drive of this remarkable person."

Dr. Arne Vainio is originally from Chisholm, MN, the son of a full-blood traditional Ojibwe mother and a Finnish father. He is an enrolled member of the Mille Lacs Band of Ojibwe in Minnesota. His Ojibwe name is Ogimaabines and he is of the Eagle Clan. He is a Family Practice Physician at the Min-No-Aya-Win Human Services Clinic on the Fond du Lac Ojibwe Reservation in Cloquet, Minnesota.

His story is an inspiring example of a person who has faced many challenges in life and used these experiences to mold himself into the person he is today. He grew up in a rural area where he and his family struggled with poverty, alcoholism and prejudice against Native Americans. In his own words, "Even though I am a physician, my story is not all that different from stories I see every day. My family history is the history of Native families everywhere."

A high school counselor told Arne that he wasn't college material; he was planning to become a mechanic until one of his high school teachers recognized his potential and encouraged him to attend the University of Minnesota Duluth. Unfortunately, he struggled with understanding the "educational system," made poor class selections and as a result, failed in his classes. So he quit school, eventually becoming a firefighter and ambulance driver in Virginia, Minnesota. However, the more time he spent in the back of the ambulance, the more he came to realize that his place was in medical school. He enrolled again at UMD, completed his undergraduate studies in 1990 and graduated from the University of Minnesota Duluth Medical School in 1994.

Dr. Vainio completed his Family Practice Residency Program at the Seattle Indian Health Board and Providence Hospital in Seattle, Washington in 1997. His hospital affiliations include St. Mary's Medical Center, St. Luke's Hospital & Regional Trauma Center, Miller-Dwan Medical Center and Cloquet Memorial Hospital. He is also employed as a preceptor at the Duluth Family Practice Center and volunteers as a preceptor for the University of Minnesota Medical School-Duluth Campus. He is a member of the Association of American Family Physicians and the Association of American Indian Physicians.

Today we can see the fruits of his education being played out in many ways – not only in the reservation clinic, but also in Native American tribal newspapers and on video. His regular column appears in the national newspaper, *News from Indian Country* and in the *Fond du Lac Reservation Newspaper*. Dr. Vainio has launched a major educational initiative directed at Native American men who typically resist seeing a doctor to take care of their health. Using himself as the patient, his video series demonstrates to Native American men how to prevent and address health issues. His Emmy-nominated documentary on the subject, *Walking into the Unknown*, produced by his wife Ivy Vainio and directed by Nate Maydole, premiered at UMD in March 2009.

He has recently added another level of interest and passion to his life: the environment. In the interest of protecting the environment, he has converted a vehicle to run on vegetable oil and he spends time in environmental conferences demonstrating his work with biofuels and attempting to encourage others, as well.

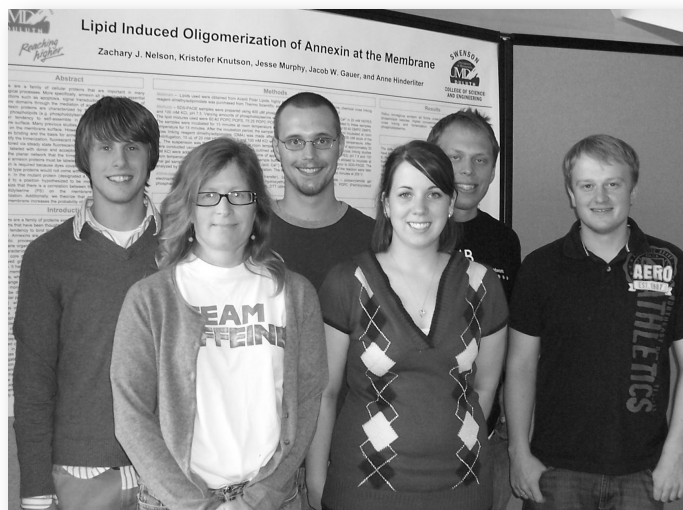
Dr. Arne Vainio recently received the U of M Medical School Alumni Society's Early Distinguished Career Award. If you would like to know more about this remarkable UMD alumnus and his inspiring work, you can find a series of his articles on the Fond du Lac Human Services site, <http://www.fdlrez.com/humanservices/main.htm>.

UMD Decade of the 60s Reunion



UMD alumni from the 1960s attended a reunion July 31 – August 3, 2008. They viewed the Tall Ships from the windows of their reunion cocktail party and enjoyed dinner and dancing at the Duluth Entertainment and Convention Center. Other events included a wine and cheese reception at Glensheen, a big band concert at the Weber Music Hall, a pizza dinner and dance starring the Whitesidewalls Rock 'N Roll Revue Band and a brunch at the Duluth Woman's Club.

Summer Undergraduate Research Program (SURP)



The UMD Department of Chemistry and Biochemistry Summer Undergraduate Research Program (SURP) began in 1994 with a generous donation from UMD alumnus Jim Swenson and his wife, Sue. Since then, about 400 students have participated in the program, receiving stipends as well as money for supplies, chemicals and equipment from the Swenson Family Foundation, faculty research grants, and other university and departmental resources.



The annual program runs for ten weeks, with students conducting research under the supervision of faculty advisors from the Chemistry and Biochemistry Department as well as other UMD programs (e.g. Biochemistry and Molecular Biology, Biology, Pharmacy). In addition to working on their research projects, students attend an orientation and safety-training program, prepare and display research posters at the SURP Poster Fair, and write a final report summarizing their research results. Throughout the ten-week program they also meet informally for picnics,



2007

Madelyn Baker
Christopher Barrett
Claudia Bizzari
Clarissa Booth
Jenny Brockman
Lacey Buckingham
Emily Chambers
Mike Dahlby
Semen Dudkin
Jon Fields
Jeffrey Grosland
Fan Jiang
Matthew Just
Jeremy Klobuchar
Kelley Kovich
Shui Li
Emily Madole
Elizabeth Maganzini
Benjamin Marsh
Jacqueline Michel
Ryan Morse
Elise Mostad
Eric Peterson
Charles Smith
Nick Struntz
Kelsi Swanson
Christian Toonstra
Leah Wehmas
Anthony Wiseman
Nick Zehm

2008

Derrick Anderson
Madelyn Baker
Blake Chapman
Jacob Gauer
Yonathan
Germescheid
Jane Gilbertson
Andrew Houghton
Pauline Jackson
Fan Jiang
Sarah Kempka
Jeremy Klobuchar
Nicholas Korte
Shui Li
Yuan Li
Megan Macdonald
Artur Mailyan
James Muriithi
Jesse Murphy
Zachary Nelson
Benjamin Page
Olga Pavlova
Giacomo Reina
Shaili Sharma
Nicholas Struntz
Kelsi Swanson
Nicholas Taurinskas
Anthony Wiseman

2009

Brandy Aman
Evan Anderson
Jerron Boser
Jerica Burchard
Luke Busta
Ryan Crist
Matthew Falk
Emily Frey
Chase Gomez
Melanie Halverson
Thomas Haroldson
Nicole Heinks
Pauline Jackson
Fan Jiang
Sarah Kempka
Grant Mathison
Amber Nelson
Zachary Nelson
Andrea Newgren
Benjamin Page
Jennifer Pernat
Maxim Prykin
Danielle Schminkey
Scott Simpkins
Jared Van Hooser
Devon Veit
Jeffrey Weilage
Krista Wendroth
Kelsey Zielke

2010

Evan Anderson
Jeremy Anderson
Rebecca Anderson
Christopher Banek
Luke Busta
Matthew Falk
Aderinsola Gilbert
Trent Hanson
Dmitry Kuznetsov
XueHong Liu
Benjamin Mattila
Andrew McCabe
Benjamin Neisen
Amber Nelson
Grady Nelson
Zach Padellford
Megan Ranger
Gregory Reynolds
Matthew Rodstein
Ryan Sisk
Daniel Thurston
Rochelle Warner
William Weyandt
Michael Williams

Graduating Seniors: 2006 - 2009

2006/2007

Nathan Aalderks, BS Chem/BS BMB
 Lindsey Bade, BS BMB *
 Gregg Baldeshwiler, BS Chem
 Katherine Bergquist, BS BMB
 Jonathan Beson, BS BMB
 Alexander Brandt, BS BMB
 Laura Brigl, BS Chem
 Joel Brittain, BS BMB* **Magna Cum Laude**
 Nathan Bruender, BS BMB* **Cum Laude**
 Neil Brummond, BS BMB* **Cum Laude**
 Lacey Buckingham, BS Chem
 Jeffrey Carlson, BS Chem
 Kristin Connors, BS BMB
 Jason Dorweiler, BS Chem
 Stacy Ebner, BS BMB
 Marie Foss, BS Chem/ BS BMB*

Summa Cum Laude

Sara Frederickson, BS BMB
 Ryan Hadt, BS Chem *
 Serah Iheasirim, BS BMB
 Kassandra Kaas, BS BMB
 Daniel Kamben, BS BMB
 Christine Kelly, BS Chem
 Matthew Modjewski, BS Chem
 Amanda Moe, BS BMB
 Morgaine Morris, BS BMB
 Daniel O'Brien, BS Chem * **Summa Cum Laude**
 Allison Peterson, BA Chem **Cum Laude**
 Eric Peterson, BS Chem
 Nicole Reardon, BS BMB * **Magna Cum Laude**
 Kidane Shulbe, BA Chem
 Joseph Simmer, BS BMB
 Stephen Sundeen, BS Chem
 Heather Taterka, BS Chem *
 Kathleen Thompson, BS BMB

Magna Cum Laude

Abigail Thyen, BS BMB *
 Joseph Vang, BS Chem
 Ashley Woodford, BS Chem/BS BMB

2007/2008

Katherine Augustin, BS BMB *

Summa Cum Laude

Adam Bazama, BS BMB
 Amanda Beaudet, BS Chem *

Summa Cum Laude

Jarryd Berkness, BS Chem
 Clarissa Booth, BS BMB *
 Emily Chambers, BS BMB * **Cum Laude**
 Michael Dahlby, BS Chem

Michael Dressen, BS BMB
 Jeff Grosland, BS BMB *
 Kimberly Gross, BS BMB
 Cynthia Hardel, BS Chem/BS BMB *
 Nicholas Haukom, BS BMB
 Barkot Heramo, BS BMB
 Jon Hornung, BS Chem * **Cum Laude**
 Peter Jurgensen, BS Chem
 Olumide Kayode, BA Chem
 Adam Ketola, BS Chem
 Peter Klopp, BS Chem/BS BMB
 Jacob Lockwood, BS BMB
 Emily Madole, BS BMB * **Summa Cum Laude**
 Benjamin Marsh, BS BMB
 Ryan Morse, BS BMB * **Summa Cum Laude**
 Elise Mostad, BS Chem/BS BMB *
 Joanne Muriithi, BS BMB
 Michael Nelson, BA Chem **Summa Cum Laude**
 Shainell Oachs, BS BMB
 Jason O'Brien, BA Chem/BS BMB
 Chidinma Odoemenem, BS BMB
 Michael Poe, BS Chem
 Jonathan Preston, BS BMB
 Adam Quinn, BA Chem/BS BMB * **Cum Laude**
 Theresa Radtke, BS BMB
 David Schmit, BS Chem
 Jason Schmidt, BA Chem
 Joseph Schneider, BS BMB *
 Andrew Schwab, BS Chem/BS BMB
 Amanda Sequira, BS Chem
 Charles Smith, BS Chem *
 Inthirai Somasuntharam, BS Chem/BS BMB *
 Paul Stenseth, BA Chem/BS BMB
 Ladislaus Strzok, BS Chem
 Jordan Thompson, BS BMB * **Cum Laude**
 Jared Thorsness, BS Chem/BS BMB
 Whitney Wehrkamp, BS BMB

2008/2009

Nilushi Abeysinghe, BS Chem
 Madelyn Baker, BA Chem/BS BMB*

Summa Cum Laude

Christopher Bicknese, BS BMB
 Erika Bladholm, BS BMB
 Ashley Blom, BS Chem/BS BMB
 Aaron Boothe, BS Chem
 Jenny Brockman, BS Chem
 Blake Chapman, BS Chem/BS BMB *
 Heather Chopp, BS BMB
 Justin Christenson, BS Chem/BS BMB
 Andrea Clemmings, BS BMB
 Allison Coffman, BS BMB
 Ryan Connell, BA Chem/BS BMB
 Scott Connelly, BA Chem/BS BMB

Andrea Clemmings, BS BMB
 Joseph Conway, BS BMB
 Michael Dashner, BA Chem
 Robert Duerst, BS BMB
 Brett Erickson, BS Chem/BS BMB
 Katy Frederickson, BA Chem/BS BMB
 Jacob Gauer, BS BMB * **Magna Cum Laude**
 Jonathan Germscheid, BA Chem/BS BMB
 Jonathan Harvey, BA Chem/BS BMB
 Dylan Huss, BS Chem/BS BMB *
 Bushra Jawaid, BA Chem/BS BMB * **Cum Laude**
 Samantha Jaworski, BA Chem/BS BMB
 Beau Johnson, BS BMB
 Nicholas Korte, BA Chem/BS BMB
 Kelley Kovich, BA Chem/BS BMB
 Shui Li, BS BMB *
 Matthew Luedtke, BS Chem
 Jacob Marold, BS BMB * **Magna Cum Laude**
 Diana Michell, BS BMB
 Kimberly Mieloszyk, BS Chem
 Jesse Murphy, BS BMB
 Yusuf Muse, BA Chem
 Alison Neal, BS Chem/BS BMB *
 Jonathan Preston, BS BMB
 Justin Richards, BS Chem/BS BMB
 Brittney Slavik, BS BMB
 Daniel Snyder, BS BMB
 Nicholas Struntz, BS Chem/BS BMB
 Kelsi Swanson, BS BMB * **Cum Laude**
 Andrew Trom, BA Chem/BS BMB
 Brett Wilson, BS Chem
 David Wilson, BS BMB
 Anthony Wiseman, BS Chem/BS BMB *
Cum Laude

** With Distinction
 (Departmental Honors)*

Graduating Seniors: 2009/2010

Nancy Aguh, BS BMB
Brandy Aman, BA Chem/BS BMB * **Summa Cum Laude**
Derrick Anderson, BS Chem/BS BMB
Jordan Bronson, BA Chem
Cole Carlblom, BA Chem/BS BMB
Nikolas Czernieki, BS Chem/BS BMB
James Didier, BA Chem **Magna Cum Laude**
Mike Fealey, BS Chem/ BS BMB* **Cum Laude**
Sara Ford, BS Chem/BS BMB *
Emily Frey, BA Chem/BS BMB *
Wil Goetsch BS Chem/BS BMB *
Chase Gomez, BS BMB *
Bonnie Grittner, BS Chem
Melanie Halverson, BS Chem/BS BMB *
Scott Halvorson, BA Chem
Tom Haroldson, BS BMB * **Magna Cum Laude**
Nicole Heinks, BA Chem/BS BMB * **Cum Laude**
Mohamed Jalloh, BS Chem/ BS BMB
Teresa Joyal, BA Chem/BS BMB
Sarah Kempka, BS BMB * **Cum Laude**
Peter Klinkenberg, BS BMB
Yuan Li, BS BMB
Jacob Marn, BS Chem

Grant Mathison, BS Chem/BS BMB * **Summa Cum Laude**
Selamawit Menghesha, BS Chem
Katie Miller, BS Chem, BS BMB * **Summa Cum Laude**
Andrea Newgren, BS BMB
Alex Paffrath, BS BMB **Cum Laude**
Ericka Panek, BA Chem/BS BMB
Jennifer Pernat, BS Chem*
Andrew Peterson, BS BMB
Eric Pownell, BS BMB
Scarlett Rusch, BS Chem/BS BMB
Jefferey Sbonik, BS BMB
Danielle Schminkey, BS BMB * **Magna Cum Laude**
Alanna Schwanke, BS Chem
Katelynn Spurgin, BS Chem
Matthew Stauber, BA Chem
Sarah Timm, BS BMB
Devon Veit, BA Chem/BS BMB *
Allise Wuorio, BA Chem *
Mai Yang Xiong, BA Chem
Kelsey Zielke, BS BMB * **Summa Cum Laude**

** With Distinction
(Departmental Honors)*



Master of Science in Chemistry Program Graduates: 2007 - 2010

The Master of Science in Chemistry degree program at UMD provides an excellent opportunity to acquire and develop technical expertise and problem-solving skills expected of today's chemical and biochemical professional. Coursework is designed to provide a firm fundamental basis for students going into a variety of chemical specialties in both professional and academic settings. Following is a list of students who have completed their master's degree over the last three years:

2007/08

Christiana Addei Maanu
Frank Ankudey
Victor Gyimah
Ryan Hadt
Rashad Karimov
Ravikrishna Vallakati
Nicholas Vidor

Post-graduation Plans

University of Arizona-Tucson, Bioanalytical Chemistry/Pharmacology Ph.D. Program
Purdue University, Medicinal Chemistry and Molecular Pharmacology Ph.D. Program
Employment, Merck
Stanford University, Chemistry Ph.D. Program
Cornell University, Chemistry Ph.D. Program
Texas A&M College Station, Chemistry Ph.D. Program
University of Minnesota Duluth, School of Medicine

2008/09

Jason Dorweiler
James Dzandzi
Gopala Jarugumilli
Keerthi Bandara Jayasundera
Zeinul-Gabiden Kazhkenov
Kyle Nelson
Roman Subbotin
Katherine Swanson
Sreedhar Tummalapalli

Employment, LKT Technologies, St. Paul, MN
McMasters University, Chemistry Ph.D. Program
Indiana University, Chemistry Ph.D. Program
Purdue University, Chemistry Ph.D. Program
Cornell University, Chemistry Ph.D. Program
University of Minnesota, School of Dentistry
Cornell University, Chemistry Ph.D. Program
Instructor, University of Minnesota Duluth
U of M Twin Cities, College of Pharmacy Medicinal Chemistry Ph.D. Program

2009/10

Hughes Ackom
Jeffrey Carlson
Ivan Geraskin
Oleksandra Kniazieva
Kristofer Knutson

Pursue Employment, Minneapolis
Employment, Roche Laboratories, Madison, WI
University of Utah, Chemistry Ph.D. Program
Employment, Kiev, Ukraine
University of Minnesota Duluth Biochemistry, Molecular Biology and Biophysics
Masters Program; Water Treatment Plant, Moorhead, MN
Johns Hopkins, Medical School
University of Minnesota School of Medicine
Indiana University, Chemistry Ph.D. Program
Employment, Ecolab
Employment, American Medical Systems, St. Paul, MN
University of Florida Gainesville, Chemistry Ph.D. Program

Heather Neu
Gregory Rohde
Srinivas Tekkam
Soren Tryggstad
Mingyu Xiao
Aleksandra Zagulyaeva

STUDENT AWARDS

Swenson Family Foundation Scholarships for Academic Excellence

2006/07: Brandy Aman, Christopher Barrett, Adam Crego, Chase Gomez, Aleesha Greenhagen, Ashley Penrod, Nicholas Snitker, Heather Taterka, Sarah Timm, Kelsey Zielke

2007/08: Rebecca Berzins, Sarah Bye, Elizabeth Crane, Michelle Ferguson, Jolene Furey, Andrew Houghton, Benjamin Jungers, Gregory Reynolds, Kristy Seaver, Ryan Sisk, Peter Steltz, Kelsi Swanson, Jared Van Hooser, Krista Wendroth

2008/09: Evan Anderson, Caitlin Barnaby, Jerron Boser, Jared Carpenter, Tessah Hollingsworth, Kelsea Ingebretsen, Sarah Kempka, Kelley Kovich, Teresa Lesch, Stephani Lipps, Amber Nelson, Kaitlyn Pelowski, Danielle Schminkey, Jacob Stevens

2009/10: Kelsey Erickson, Nicole Heinks, Kelsey Kraczek, Zach Lundstrom, Ashley Mertens, Jamie Nosbisch, Sarah Pedersen, Evian Rave, Randi Timerman

Achievement in Organic Chemistry (ACS) Award

2006/07: Minji Kim

2007/08: Grant Mathison

2008/09: Krista Wendroth

2009/10: Evan Anderson, Samantha Spaeth

HyperCube Scholar Award

2006/07: Daniel O'Brien

2007/08: Nick Struntz

2008/09: Derrick Anderson

2009/10: Gregory Reynolds

Peterson Memorial Scholarship

2006/07: Cynthia Hardel

2007/08: Dylan Huss

2008/09: Blake Chapman

2009/10: Whitney Hines

Lake Superior Section of ACS Outstanding Senior

2006/07: Neil Brummond, Nicole Reardon

2007/08: Emily Chambers, Inthirai Somasuntharam

2008/09: Madelyn Baker, Jacob Gauer

2009/10: Michael Fealey, Sara Ford

The American Institute of Chemists Outstanding Senior

2006/07: Nathan Bruender

2007/08: Clarissa Booth

2008/09: Jacob Marold

2009/10: Katie Miller

F. B. Moore Academic and Leadership Award

2006/07: Marie Foss

2007/08: Amanda Beaudet

2008/09: Anthony Wiseman

2009/10: Katie Miller

CRC Freshman Award for Excellence in General Chemistry

2006/07: Jessica Jones, Timothy Kranzler, Jenna Carlson, Travis Johnson

2007/08: Bridget Hines, Whitney Hines, John Conely, Bryan Springhetti

2008/09: Lauren Schulberg, Jacob Stanley, Evan Anderson, Kelsey Stupica

2009/10: Joseph Zbaracki, Dana Roach, Sheewin Pananookooln, Molly Gorder

Undergraduate Analytical Chemistry Award

2006/07: Amanda Beaudet

2007/08: Katie Miller

2008/09: Brandy Aman

2009/10: Luke Busta

James H Maguire Scholarship

2006/07: Shui Li, Jacob Marold, Charles Smith

2007/08: Sarah Kempka, Grant Mathison

2008/09: Luke Busta, Michael Fealey, Thomas Haroldson

2009/10: Evan Anderson, Amy Redfield, XueHong Liu, Chuhan Zong

Robert Bayer Memorial Scholarship

2006/07: Jared Thorsness, Alison Neal

2007/08: Sarah Kempka

2008/09: Devon Veit

2009/10: Ben Neisen

Norm and Joan Gill Scholarship

2007/08, 2008/09, 2009/10: John Knebel

Chemistry and Biochemistry Outstanding Undergraduate Teaching Assistant

2006/07: Madelyn Baker, Nathan Bruender, Blake Chapman, Michael Claussen, Jacob Gauer, Ryan Hadt, Jonathan Hornung, Nicole Reardon, Jacqueline Sackett, Laura Stranford, Brian Vette

2007/08: Emily Chambers, Shannon Gallagher, Jacob Gauer, Jonathan Hornung, Ben Marsh, Charles Smith, Laura Stranford

2008/09: Nikolas Czerniecki, Michael Fealey, Jacob Gauer

2009/10: Derrick Anderson, Chris Banek, Nikolas Czerniecki, Michael Fealey, Grant Mathison, Melanie Halverson

Larry C. Thompson Inorganic Chemistry Award

2006/07: Ryan Hadt

2007/08: Kathryn Augustin

2008/09: Nicholas Struntz

2009/10: Grant Mathison

Casmir Ilenda Award for Outstanding Undergraduate Research

2006/07: Nathan Bruender, Neil Brummond, Nicole Reardon

2007/08: Amanda Beaudet, Emily Madole, Elise Mostad, Charles Smith

2008/09: Madelyn Baker, Blake Chapman, Jacob Gauer

2009/10: Melanie Halverson, Thomas Haroldson, Grant Mathison

STUDENT AWARDS, CONTINUED

Departmental Honors

2006/07: Lindsey Bade, Joel Brittain, Nathan Bruender, Neil Brummond, Marie Foss, Sara Frederickson, Ryan Hadt, Daniel O'Brien, Nicole Reardon, Heather Taterka, Abigail Thyen

2007/08: Kathryn Augustin, Amanda Beaudet, Clarissa Booth, Emily Chambers, Michael Dressen, Jeffrey Grosland, Cynthia Hardel, Jonathan Hornung, Emily Madole, Elise Mostad, Ryan Morse, Adam Quinn, Joseph Schneider, Charles Smith, Inthirai Somasuntharam, Jordan Thompson

2008/09: Madelyn Baker, Blake Chapman, Jacob Gauer, Dylan Huss, Shui Li, Jacob Marold, Alison Neal, Anthony Wiseman

2009/10: Brandy Aman, Michael Fealey, Sara Ford, Emily Frey, Wil Goetsch, Chase Gomez, Melanie Halverson, Thomas Haroldson, Nicole Heinks, Sarah Kempka, Grant Mathison, Katie Miller, Jennifer Pernat, Danielle Schminkey, Devon Veit, Kelsey Zielke

John C. Cothran Memorial Fellowship

2006/07: Christiana Addei-Maanu, Elizabeth Capan, Rashad Karimov, Venkata Jaganmohan Reddy, Ravikrishna Vallakati

2007/08: James Dzandzi, Brian Finstrom, Ryan Hadt, Keerthi Jayasundera, Roman Subbotin, Srinivas Tekkam

2008/09: Jeff Carlson, Jason Dorweiler, Ivan Geraskin, Greg Rohde, Srinivas Tekkam

2009/10: Michael Dahlby, Nicholas Haukom, Benjamin Marsh, Joseph Schneider, Ladislaus Strzok, Cong Zhang, Qianhong Zhu

Dr. Nathan and Elaine Ballou Scholarship

2007/08: Michael Fealey, Katie Miller

2009/10: Trent Hanson

UMD Catherine E. Cox Scholarship for Chemistry and Biochemistry

2009/10: Rebecca Anderson, Andrew McCabe, Rochelle Warner

Ione Thompson Goodman Scholarship

2009/10: Sarah Farley

Departmental Outstanding Service Award

2006/07: Emily Hilgeman, Ashley Woodford

2007/08: Emily Madole

2008/09: Robert Duerst

2009/10: Grant Mathison, Ryan Sisk, Michael Woods

Minnesota Chromatography Award (received in Twin Cities)

2006/07: Anthony Wiseman

John Holmen Award

2009/10: Jacob Strange

UMD Siders Chemistry Graduate Fellowship

2009/10: Heather Neu, Carla Steinbring, Aleksandra Zagulyaeva

Moses Passer Graduate Fellowship

2006/07: James Dzandzi, Brian Finstrom, Keerthi Jayasundera, Zeinul Kazhkenov, Kyle Nelson, Roman Subbotin

2007/08: Hughes Ackom, Jason Dorweiler, Ivan Geraskin

2008/09: Hughes Ackom, Gregg Baldeshwiler, Heather Neu

2009/10: Blake Chapman, Jacob Gauer, Samantha Klein, Matthew Luedtke, Dhanushka Wickramasinghe

SCSE Outstanding Graduate Teaching Assistant

2006/07: Elizabeth Capan, Amanda Smith

2007/08: Brian Finstrom, Ryan Hadt

2008/09: Jeff Carlson, Brittany Kruger, Kristofer Knutson

2009/10: Nick Haukom, Heather Neu, Aleksandra Zagulyaeva

Chemistry and Biochemistry Outstanding Graduate Teaching Assistant

2007/08: Keerthi Jayasundera, Kyle Nelson, Kate Swanson

2008/09: Hughes Ackom, Jason Dorweiler

2009/10: Dan Consoer, Michael Dahlby, Jacob Gauer, Megan Macdonald, Benjamin Marsh, Jesse Murphy, Audrey Schenewerk, Elizabeth Welsh

Faculty Awards

Over the last few years faculty in the UMD Department of Chemistry and Biochemistry have garnered numerous awards and citations for the work they do at UMD and in the larger academic and research communities. Their meritorious work enhances the quality of programming offered in the department as well as the quality of students recruited for both undergraduate and graduate studies. Here are some faculty awards for the time period.

2008

Bilin Tsai – UMD Commission on Women Linda M. Larson Woman of the Year Award

This award is given to a woman who has gone above and beyond the call of duty to make a difference in the lives of women at UMD and in the community. The 2008 award cites Dr. Tsai's "pioneering leadership as a woman faculty member and administrator in science at UMD – she has earned a reputation as a visionary".

Venkatram Mereddy – SCSE Young Teacher Award

The SCSE Young Teacher Award is given to probationary tenure-track Assistant Professors in SCSE who provide special contributions to the learning environment at UMD through their outstanding classroom teaching, creative use of technology, special course development efforts, unusual time commitments or logistical issues with certain courses and/or dedication to helping students outside of class.

2009

Josef Werne – Gledden Visiting Senior Fellow Award, Australia, 2009-10

The Gledden Visiting Senior Fellowships are funded by the estate bequeathed to the University of Western Australia in Perth, Australia by the late Robert John Gledden to promote and encourage education and research at the University in the disciplines of applied science. While at the University of Western Australia, Prof. Werne studied the biogeochemistry of aquatic systems.

Ron Caple - St. Olaf College 2009 Alumni Achievement Award

The Board of Regents of St. Olaf College and the St. Olaf College Alumni Association bestows this award in recognition of outstanding achievements by alumni whose accomplishments have brought honor to themselves and to the College and whose service and leadership have exemplified the College conviction that one's life is more than a livelihood: it is a journey that focuses on what is ultimately worthwhile and fosters the development of the whole person in mind, body, and spirit.

John Fulkrod - NSIC 2009 Women's Track and Field Coach of the Year

Viktor Zhdankin – Sabra S. and Dennis L. Anderson Scholar/Teacher Award

This award honors a faculty member of scholarly distinction and teaching excellence who has been teaching undergraduates at UMD for a minimum of ten years and who has encouraged undergraduates to undertake meaningful research projects.

2010

Viktor Zhdankin – ACS Award for Creative Research and Applications of Iodine Chemistry

This major, internationally recognized award was announced in spring 2010. It will be formally presented to Dr. Zhdankin in March at the 241st ACS National Meeting and Exposition in Anaheim, CA. More information on this prestigious award will be available in the next issue of Transitions.

Steven Berry – SCSE Young Teacher Award; Outstanding Student Organization Advisor

Please see above for the description of the Young Teacher Award.

The Outstanding Student Organization Advisor award is given to an advisor of an organization that has gone above and beyond his/her requirements as an advisor and has displayed a genuine commitment to fostering the growth and development of the organization.

Anne Hinderliter – NSF Career Award

The National Science Foundation offers this award to support junior faculty who exemplify the role of teacher-scholar through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.

RONNIE LINDSTROM INTERNATIONAL STUDENT SCHOLARSHIP



Ronnie Lindstrom

In 2009 Dr. Ron Caple and his family established the Ronnie Lindstrom International Student Scholarship Fund, with the goal of promoting undergraduate studies at UMD for students from developing countries.

Ronnie Lindstrom was Ron's first undergraduate researcher at UMD – and the star quarterback on the Chem Club's touch football team in the 1960's. When Ronnie was faced with being drafted to serve in the Vietnam War, he opted to enlist in the Air Force. On January 2, 1970 his F-4 Phantom Jet was lost in a mission over Laos and his body was never recovered. While he is listed as MIA on the Vietnam Memorials both in Washington D.C. and Duluth, he was almost certainly killed in action.

The loss of this young man had a profound impact on both his classmates and his mentor, Dr. Ron Caple, who was inspired to devote his academic career in chemistry to the promotion of international understanding. In 1974 he spent a sabbatical leave in Moscow in the then Soviet Union. He was recognized by the National Science Foundation for participating in the only viable cooperative research project operating at the height of the Cold War and was later named Doctor Honoris Causa of the Russian Academy of Sciences and Moscow State University. The Russian connection eventually led to research projects in Baku, Azerbaijan, Pinar del Rio, Cuba, and Hanoi, Vietnam; these collaborations continue to this

day and have resulted in joint publications in all three countries.

While on a research visit to Hanoi in 1998, Ron stayed with the parents of 10-year-old Thu An Nguyen. When he became seriously ill, Thu An's mother, a physician in the Vietnamese Army, nursed him back to health. During his extended stay with the family, he encouraged Thu An to master English and to consider pursuing her undergraduate studies at UMD. Following his advice, Thu An arrived in Duluth in August of 2008 to begin her education in biochemistry and business at UMD. She adapted well to student life and to the Northern Minnesota climate, even learning to ice-skate and cross-country ski. She plans to return to Vietnam after finishing her studies.

Ron's international experiences underscored for him the need to provide financial assistance to deserving students, like Thu An, who wanted to pursue undergraduate studies at UMD; hence the establishment of the Ronnie Lindstrom International Student Scholarship Fund. It is Ron's goal to find support for two to three students a year. Because of Ron's contacts in Vietnam, Cuba and Azerbaijan, applicants from these countries will receive preference; however, applications from any developing country will be welcome. Female students will be encouraged to apply due to their under-representation in the educational systems in many of these countries; nonetheless, all qualified students will be considered. In addition, it is desirable that the recipients of the scholarship indicate an intention to return to their home country.

Ron and his family hope that Ronnie's classmates from the 1960's, as well as former students and colleagues of Ron's, will support this effort. Contributions can be made to the Ronnie Lindstrom International Student Scholarship Fund by contacting the UMD Development Office, dev@d.umn.edu, 218-726-7989 or toll free 866-726-7110.



Ronnie Lindstrom and his plane in Vietnam

It is important to the department to establish and maintain relationships with scientific colleagues from around the world. Faculty members participate in national and international conferences, study abroad courses, and exchanges with other universities. Within the past few years faculty members have traveled to several countries, and the department has also hosted visiting faculty and researchers from Japan, China, Ukraine and Russia, as well as summer undergraduate research students from Russia and Italy.

INTERNATIONAL ACTIVITIES

In June 2008, the joint **International Conference and Indo-US Workshop on Mathematical Chemistry**, sponsored by UMD, NRRI, Hewlett-Packard, the International QSAR Foundation and the International Society of Mathematical Chemistry, was held at UMD. The conference was organized by Dr. Subhash Basak of the Center for Water and the Environment at the NRRI. Distinguished guests included the executive director and the science manager of the Indo-US Science and Technology Forum, Dr. Arabinda Mitra and Dr. Smriti Tripathi, who participated in discussions on opportunities for funding Indo-US collaborative science. Chancellor Kathryn Martin and Professor and Vice Chancellor Vincent Magnuson delivered opening remarks. Participants from our department included faculty members **Brian Gute, Venkatram Mereddy, Jon Rumbley**, and **Paul Siders**, and Keith Lodge of the graduate faculty; Chemistry alumna Denise Mills helped organize and presented; and undergraduate students Shui Li (BMB) and John Leitch (Chemistry), attended the conference and provided assistance.

Don Poe spent the first half of his 2008-2009 sabbatical in Birmingham, England working on research in separations science. He attended the International Supercritical Fluid Chromatography Conference in Zurich Switzerland and collaborated with colleagues at the University of Orleans in France.

Larry Thompson, professor emeritus, was honored at a conference in Recife, Brazil in the summer of 2009 for his 40 years of collaboration with Brazilian colleagues in the study of rare earth elements. Students from his 1969 class in São Paulo, as well as from other Brazilian institutions and Europe, attended the workshop.

Bilin Tsai taught in the UMD Study in England Program during Fall 2008, where she taught two liberal education chemistry courses to UMD students on the campus of the University of Birmingham in west central England. In addition to *Aspects of Chemistry*, Prof. Tsai developed a new course, *From the Industrial Revolution to Green Chemistry* to take advantage of the proximity of Birmingham to the area described as the birthplace of the Industrial Revolution (Shropshire England).

In 2009, **Dr. Josef Werne** spent his sabbatical year working with colleagues at two institutes, the Centre for Water Research at the University of Western Australia, and the Organic and Isotopic Geochemistry Center at Curtin University of Technology, both located in Perth, Australia. He also continued his collaboration with

the Marine Organic Biogeochemistry group at the Royal Netherlands Institute for Sea Research (NIOZ) and his collaborative work with Lindsay Powers in Malawi, East Africa, where monthly samples are being collected from Lake Malawi in order to investigate the ecology and biogeochemistry of the aquatic microbial group Crenarchaeota.

In 2007 Dr. Werne's group presented their research at international conferences in Torquay, England; Barcelona, Spain; and Köln, Germany. Dr. Werne also chaired or co-chaired sessions in Köln (Aug 2007), Davos, Switzerland (June 2009), and Guadalajara, Mexico (June 2009).

Viktor Zhdankin attended the Third International Conference on Hypervalent Iodine in July 2010 in Bordeaux, France, where he sat on the organizing committee and appeared as keynote speaker. Also, in October 2010 Dr. Zhdankin visited the Tomsk Medical University in Russia and presented four lectures.

Several chemistry graduate students also participated in international activities. **Brittany Kruger** traveled to Malawi in January 2009 to assist in collecting sediment from Lake Malawi for a study looking at the variable fate of terrestrial vs. aquatic organic matter. **Carla Steinbring** received funding in March 2009 to visit the Fourier-Transform Mass Spectrometry Facility at the Woods Hole Oceanographic Institution to analyze lake and stream organic matter samples. **Ryan Hadt** spent a summer at Tohoku University in Sendai, Japan, where he worked with Dr. Yoshiyuki Kawazoe at the Institute of Materials Research. This facility has the largest supercomputer in Japan.

As always, the department continues its active collaboration with students and scientists from universities in other countries. Recent visitors to the department include summer undergraduate research students **Semen Dudkin, Dmitry Kuznetsov** and **Maxim Prykin** (Russia), and **Giacomo Reina** (Italy), visiting professors **Dr. Zhendong Liu** and **Dr. Jiang-Min Chen** (China), **Dr. Rodion Belosludov** (Japan) and **Dr. Mekhman Yusubov** (Russia), and visiting research associate **Dr. Ksenia Maximova** (Russia). There are two international postdoctoral research associates on staff, **Dr. Pavlo Solntsev** (Ukraine) and **Dr. Akira Yoshimura** (Japan) and a scientist, **Mohammad Alam** (India).

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